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ABSTRACT

A 2-year project to specify new designs for the comprehensive high school of the future identified the following important features: (1) a guaranteed set of learner outcomes closely linked to present and future life roles and responsibilities for all students; (2) learning applied to life situations, using authentic assessment; (3) multiple ways to learn; (4) integration of high-level academic education and modern vocational education for all; (5) partnerships with parents and families, business, industry and labor, community-based organizations, and other schools to diversify learning settings and to make learning up-to-date and meaningful; (6) a special learning signature that gives coherence and spirit to learning; (7) operation as a learning community that may require the subdivision of large schools into smaller units; (8) alignment and unification of all school components to achieve quality and efficiency; (9) an engaging learning environment that naturally leads to cooperative experiential learning; (10) staffing that encourages teamwork, attention to unique learning needs, and full use of educational talent and energy in the school and community; (11) extensive use of learning technology; (12) decision making consistent with overall aims, yet close to the problem at hand; and (13) costs that do not exceed current budget. (Among topics discussed in the document are the "design-down" process, learner outcomes, the learning process, the learning organization, decision-making, learning partnerships, staff and staff development, learning technology, and an archetype for a new facility, illustrated with architectural drawings.) (CML)

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NCRVE
National Center for Research in Vocational Education
University of California at Berkeley

NEW DESIGNS
For The Comprehensive High School
Executive Summary Report from the NCRVE University of Minnesota Site, College of Education, Department of Vocational and Technical Education, St. Paul, Minnesota. December 1992

A New Vision For The Comprehensive High School

Preparing Students For A Changing World

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By George H. Copa and Virginia H. Pease

The Economy. Few words have such a gripping power over people. The economy is thought to have been a major reason for the political repudiation of an incumbent American president in 1992. The economy was seen as a major factor in the downfall of Communism in the U.S.S.R., as well as being responsible for reshaping modern Europe and nations throughout the world. The economy certainly under girds deep social problems such as drugs, violence, and racial unrest.

It's amorphous — lacking shape, form, pattern or specific structure — but everyone feels it in their life places. When probed for specifics, the economic problem quickly translates into the current less-than-desirable state of affairs for families, workplaces, and communities.

So, how do we make the economy work better in the interests of its people, and of our changing world? While a range of strategies often are proposed, improving education is always near the top of the list. Particularly for the United States, attention focuses on improving the high school. Those outside the educational system usually focus on a lack of sufficient learning of the kind needed to live well in today's complicated world. Cost of education also ignites many judgments about what we are getting for the money we are spending.

On closer examination, the problem with American high schools turns on three problem areas. First, most teenagers today attend high schools that show little connection to what is happening in their families,

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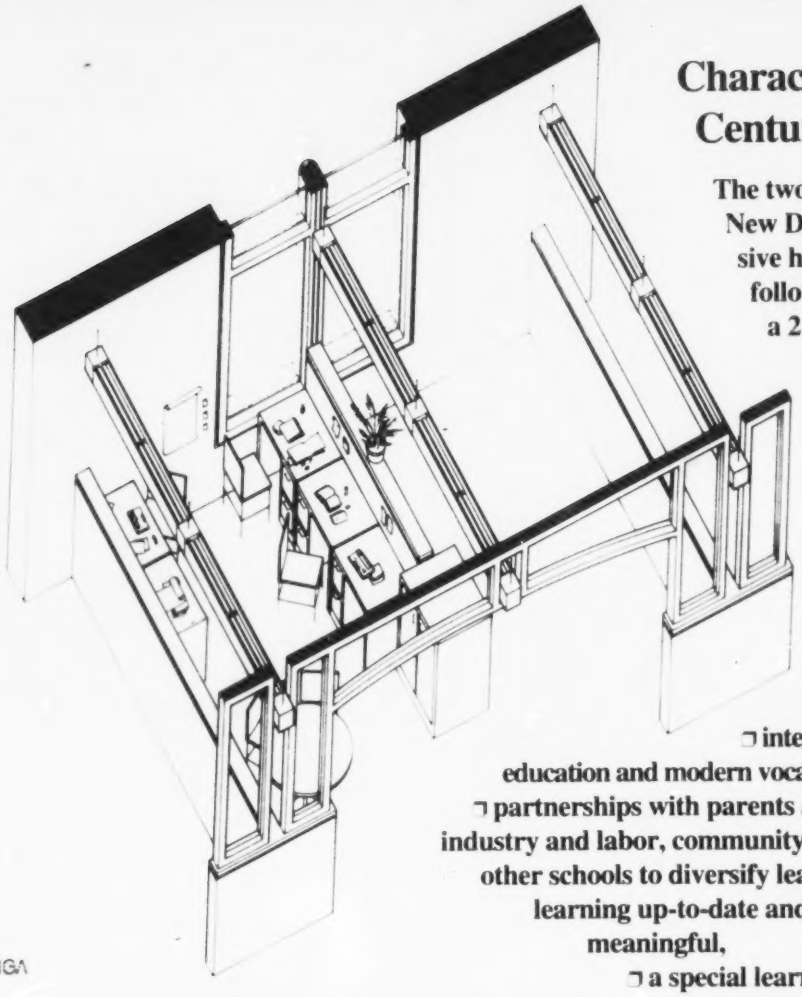

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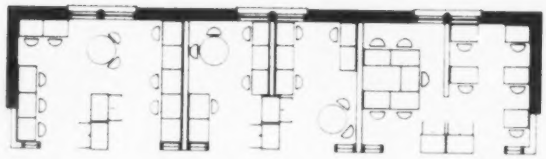

Characteristics Of A 21st Century High School

The two-year project to specify New Designs for the comprehensive high school identified the following important features of a 21st century high school

- a guaranteed set of learner outcomes closely linked to present and future life roles and responsibilities for all students,
- applying learning to life situations using authentic assessment,
- multiple ways to learn,
- integration of high level academic education and modern vocational education for all,
- partnerships with parents and families, business, industry and labor, community-based organizations, and other schools to diversify learning settings and make learning up-to-date and meaningful,
- a special learning signature that gives coherence and spirit to learning,
- operation as a learning community that may require the subdivision of large schools into smaller units,
- alignment and unification of all school components to achieve quality and efficiency,
- an engaging learning environment that naturally leads to cooperative and experiential learning,
- staffing that encourages teamwork, attention to unique learning needs, and full use of all educational talent and energy in the school and community,
- extensive use of learning technology,
- decision making consistent with overall aims, yet close to the problem at hand,
- costs that do not exceed current budget.

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workplaces, and communities. Students are caught in limbo. Many respond by showing disdain for school and motivation to learn is lost.

Second, in today's information-centered world students frequently are presorted and channeled into "tracks" of learners, which foster inequity in educational opportunity. All students need to be prepared to interpret what they read, to solve real problems, and to make wise decisions. All students need a sound general education and opportunities to develop specific skills directly useful in work, family, and community life. And, all students need to recognize that learning is a continuous process.

Third, generally lacking in today's educational system is a common vision for — and solid commitment to — clear educational goals. Quality education must be linked to a straightforward educational strategy that all understand and accept.

These, then, are the problems toward which this report is directed — the mismatch of school and life, the inequity in educational outcomes, and the lack of organizational effectiveness in high schools.

Solutions to these problems can be found in merging the best practices of vocational and academic education.

This distilling of the best practices of vocational and academic education is at the heart of a redesigned comprehensive high school.

ENVISION . . .

. . . .a comprehensive high school that reawakens the potential of all learners, staff, and community. A school that turns conventional assumptions about high school upside-down.

. . . a school with a more level "playing field" for all students — guaranteeing successful learner outcomes for every student. A renaissance school that gives focus, coherence, and spirit to learning.

. . . .a school as a learning community where learner outcomes, the learning process, school organization, staffing, and partnerships with other organizations are fully identified, aligned and unified.

. . . . a school with an environment so rich in discovery opportunities that learning is a naturally occurring, self-motivating phenomenon.

. . . a school designed to display and demonstrate learning — all at a cost no greater than that of schools today.

This is the new vision implicit in the specification for new designs for the comprehensive high school.

PROJECT SCOPE

New Designs for the Comprehensive High School summarizes the educational research carried out in 1991 and 1992 in the College of Education at the University of Minnesota, St. Paul, Minn., and with the National Center for Research in Vocational Education (NCRVE), University of California, Berkeley, the project's sponsor.

The project's unique scope was to bring together information from a wide variety of sources for all aspects of school design. The project incorporated insights from research and development, other exemplary educational endeavors, and variations in high school structures, as well as strategies used in other countries, and imaginative ideas by futuristic educators. Close collaboration with innovative teacher educators, policy makers and community representatives was invaluable in ensuring that the new design prototype would be strategic, yet workable, in practice.

The resulting designs are intended to provoke discussion and to provide a road map or blueprint to guide longer-range planning and policy for high schools.

LEARNING SIGNATURE

Selecting a learning signature and a worthy set of leaner outcomes are paramount in the design process of a new comprehensive high school. Considerable research suggests that high schools with focus or special character — a learning signature —

provide an identity around which students can rally, talk, and share. This signature can be in the form of a person, picture, or set of words.

The Design Group went through an extensive process in selecting a learner signature for the prototype comprehensive high school, recognizing in the process the value to be derived by each system in going through this process for themselves. To have maximum benefit, a learning signature must be tailored to a school community's unique context and needs.

The learning signature proposed by the Design Group incorporates the concepts of a learning community, the integration of vocational and academic education, and the need for educational transition in high schools.

LEARNING SIGNATURE

The arrows represent the coming together of all partners in a community to enrich learning, as well as integrating the academic and vocational components of the curriculum. The necessity of coming together is represented by the position of the arrows — the actual form of the result of coming together yet to be worked out by the involved partners through interaction and innovation.

The arrows also represent the transformation(s) before us in comprehensive high schools. The bird represents the comprehensive high school graduate with education tucked under its wing — confident and ready to commence life's journey.

DESIGN SPECIFICATIONS

The learning signature should:
- **give a special character to the school**
- **give focus and coherence to all components of the school**
- **powerfully communicate the vision for the school**
- **be easily and clearly understood by all stakeholders in the school**
- **not exclude any students**
- **represent a consensus vision of stakeholders for the school.**

DESIGN - DOWN PROCESS

LEARNING SIGNATURE
↓
LEARNER OUTCOMES
↓
LEARNING PROCESS
↓
LEARNING ORGANIZATION
↓
LEARNING PARTNERSHIPS
↓
LEARNING STAFF
↓
LEARNING ENVIRONMENT
↓
LEARNING COST

The project relied heavily on group process to advance sequentially through a series of seven closely-connected phases. The design-down process insured that the first two phases — the learning signature and learner outcomes — would be keystone specifications from which all others were to be derived and rationalized. Additional phases developed specifications for the learning process (curriculum, instruction, assessment), organization and partnerships, staffing and staff development, learning environment (facilities and technology), and cost.

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SELECTING LEARNER OUTCOMES

It became apparent that the process of communities working together to define their outcomes is as important as the outcomes generated.

At the first stage of the design process, the Design Group examined lists of learner outcomes from states and individual schools throughout the country. Based on this analysis, the Design Group elected to use the proposed secondary learner outcomes developed by the Minnesota Department of Education in 1991. The outcomes were not as clearly linked to the future life roles and context of students as would have been desired, yet the list was a big step in the desired direction for outcome statements, was internally consistent and coherent, and was surviving a rigorous and disciplined process of development.

The Design Group recognized that the list was not transformational, so much as transitional from the traditional practice of stating outcomes related to each subject matter area, and that the outcomes were more timid than the Design Group would have liked.

The Minnesota Department of Education's proposed list of secondary education outcomes — as stated here — felt like a solid beginning in early 1991:

> **In order to lead productive fulfilling lives in a complex and changing society and to continue learning, the graduate shall demonstrate the knowledge, skills, and attitudes essential to: (a) communicate with words, numbers, visuals, symbols, and sounds; (b) think and solve problems to meet personal, social, and academic needs; (c) contribute as a citizen in local, state, national, and global communities; (d) understand diversity and the interdependence of people; (e) work cooperatively in groups and independently; (f) develop physical and emotional wellbeing, and (g) contribute to the economic wellbeing of society.**

Minnesota has since moved beyond the above list to a set of outcomes that focus more on life roles and context of students, including: constructive thinker, self-directed learner, effective communicator, collaborative producer, and community contributor.

For many years American secondary schools have wrestled with philosophical and practical questions concerning what educational practices make the most effective use of available resources. School leaders concerned with developing a sensible goal-related framework for high schools have alternately stressed "inputs," or what students should be taught, and "outputs," or what learning students should be able to demonstrate.

Beginning in the late 19th century a series of commissions and committees, and scholarly and education department reports have undertaken to define the proper work of schools. The recommendations in these reports are presented in the form of goals, principles, aims, and perspectives. Emphasis has ranged from the specification of instructional content to the measurement of competencies.

In recent years, there has been increased focus on developing adaptive or flexible skills in secondary schools. Educators are being reminded that today's student will be living in the 21st century and that skills and attitudes on how to learn effectively throughout life likely will distinguish successful and unsuccessful graduates.

The Design Group carefully considered both the general purposes and desired outcomes of the comprehensive high school in the 21st century. The group concluded that learner outcomes in an effective school should be succinctly descriptive, focused on actual students in school, meet local and national tests of legitimacy, represent balanced concern for the range of talent and development of students, motivate aspirations for educational excellence, and emphasize the inclusion of *all* students in seeking these outcomes.

It became indisputably clear that schools should put greater emphasis on group process, interpersonal communication, team-

LEARNER OUTCOME DESIGN SPECIFICATIONS

The Design Group established the following design specifications for developing desired learning outcomes for the comprehensive high school of the 21st century. Learner outcomes should:

- **be described in no more than one-half of a standard printed page**
- **focus on the customers of the school**
- **be able to survive tests of legitimacy from the stakeholders in the school**
- **represent balanced attention to all areas of human talent and development**
- **involve reaching for a meaning of educational excellence that provides challenge and opportunity, perhaps beyond present grasp**
- **convey the belief that the outcomes represent goals for all students.**

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work, multi-linguism, problem solving, critical thinking and basic competence with technologies.

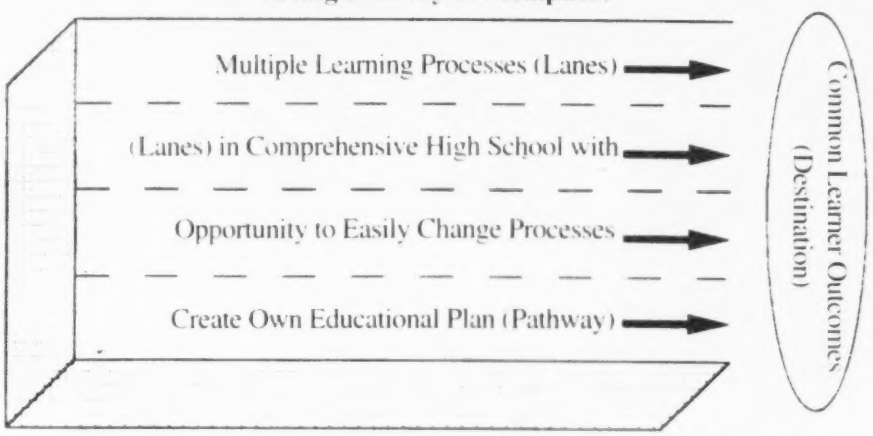
LEARNING PROCESS

Since students differ according to life goals, backgrounds, personalities and learning styles, the learning process must be flexible. Alignment and integration of the curriculum, instruction, and assessment are necessary for a successful learning process. The learning process can be envisioned as a "multi-lane highway or freeway," (see illustration, above).

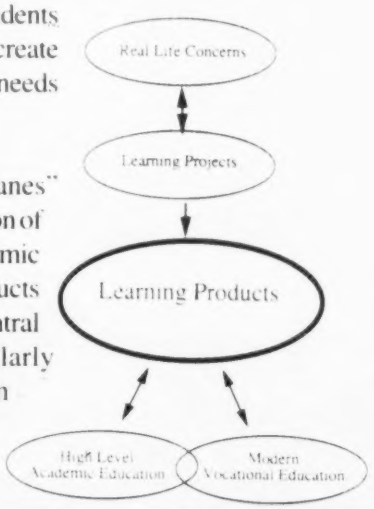
Each of the "lanes" represents a different route for learning and could involve different content, methods, context, and assessment. The lanes are not for students with different ability levels. To the contrary, each lane should have students with a full range of abilities. Students are expected to easily change lanes and create their own educational pathways as their needs and interests change.

Undergirding the "roadbed of learning lanes" is a highly unified and reinforced foundation of modern vocational and high level academic education. Further, authentic learning products resulting from learning projects are a central part of the learning process, particularly assessment. The products and projects form a meaningful purpose and context for integrating modern vocational education and high level academic education.

LEARNING PROCESS: CURRICULAR INTEGRATION
(Using Freeway as Metaphor)


Multiple Learning Processes (Lanes)
(Lanes) in Comprehensive High School with
Opportunity to Easily Change Processes
Create Own Educational Plan (Pathway)
Common Learner Outcomes
(Destination)

Integrated High Level Academic and Modern Vocational Education as Foundation (Roadbed).



LEARNING PROCESS DESIGN SPECIFICATIONS

Learning process design specifications for new designs for the comprehensive high school are:

❒ The learning process is aligned with learner outcomes.

❒ Curriculum, instruction and assessment should be aligned with each other within the learning process.

❒ The learning process should be relevant to the student's life experience.

❒ The learning process should be personalized to each student.

❒ The learning process should be active and experiential for each student.

❒ The learning process should be freeing and empowering for each student.

❒ The learning process should be rigorous for each student.

❒ The learning process should crea feeling of community among students.

LEARNING ORGANIZATION

Schools effectively experiencing change report that the watershed of restructuring is the school's organization. But different organizational structures alone assure nothing. Schools willing to relinquish the traditional organization of learners, settings, processes, can use multiple strategies, context, and organizational options.

However, the five elements — learners, settings, processes, time, staff — all must be aligned and coherent with each other. That plus an agenda of powerful content are the keys to successful restructuring. The Design Group concluded that the ways in which the various elements come together make a great deal of difference in the outcomes and learning processes. They recommend the following:

1. Learners should be organized into smaller groups within their learning community, according to common interests, long-term projects, or other choices. A vocational-academic stratification was not recommended.

2. Settings should include community resources and other learning environments. Places of paid and unpaid work provide settings that weave the fabric of learning at school and at work and provide alternative contexts that improve learning.

3. Learning processes and settings should be integrated to reinforce each other.

4. Time schedules should be flexibly organized around three priorities: (a) time i class, (b) time for learning in the community, and (c) time for teachers to plan and work with colleagues and partners.

5. Staff, along with learning time, should be uncoupled from the Carnegie Unit. The Design Group believes staff needs an organization which recognizes special talents and encourages staff interaction and innovation. Ideally, different school house plans will be staffed in different ways to encourage alternative student-staff organizations.

LEARNING ORGANIZATION DESIGN SPECIFICATIONS

The recommended organizational specifications are:

❒ Organizational elements are aligned with the signature, outcomes, learning processes and among themselves.

❒ Organization should be responsive to the individual learning plans of the student population. Students should be involved in the planning process that leads to a flexible learning plan that is periodically reviewed.

❒ As a way to build community and maximize motivation and achievement, internal groupings of students in large schools should be limited; groups of 250 to 500 are recommended. Smaller groups should maintain links to large groups.

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ORGANIZATION

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❒ Students should be grouped according to interests, projects and expressed choices when this serves learner, time or process needs.

❒ Curriculum should be organized in a manner that encourages and allows integration of the separate discipline areas. It may be possible to organize curriculum by outcomes or by areas of social development.

❒ Learning time should be flexibly scheduled to encourage and support learner outcomes through a variety of learning strategies and to allow a concentrated effort when appropriate.

❒ Learning settings should extend into the community through partnerships and policy.

❒ Staff should be connected to students in ways that provide maximum opportunities to focus or to change direction as students move toward completion of high school.

DECISION MAKING

The process through which important decisions are made in a comprehensive high school is vital to the success of that institution. The New Designs school needs to be guided by a fresh vision of decision making that will counteract inertia and accommodate continuous growth and transition.

Decisions in the New Designs school should emanate from the design-down process often associated with outcome-based education. Decision making processes in business and labor organizations — which are moving in the direction of employee participation, high performance, and quality-based management — can be effectively used in the New Designs school. Good decision making processes reflect both the vision and the values of the organization and involve all the stakeholders. Good decision making also should be based on practical reasoning.

The nature of decisive authority and participation becomes clearer in the New Designs school with an emphasis on local decision making by team members. What are "good" decisions in a comprehensive high school?

The Design Group believes that good decisions should help reach the ideals of the school's signature, help prepare students to live in a changing and multicultural world and to face the challenge of reconciling differences between school and community. Good decisions also will reflect the positive process of having a voice in shaping one's future.

DECISION MAKING DESIGN SPECIFICATIONS

The Design Group recommends the following decision making design specifications for the comprehensive high school:

❒ Decisions should be deeply rooted in and aligned with the signature and learner outcomes.

❒ Decision making should begin as close to the problem at hand as possible. It should also consider the short- and long-term consequences of the action for all those close to and farther removed from the problem.

❒ Decision making should encompass staff, students, partners and the broader community.

❒ Decision making should be authoritative and recognize the authority is vested unequally.

❒ Decision making should have access to the resources of all the school's partners.

❒ Decision making should be "yes-based" rather than "no-based," and it should assume waivers or variances are already under local control or will be granted by the controlling agency.

❒ Decisions should be transitional between traditional and progressive ways of acting.

LEARNING PARTNERSHIPS

Considering the "real-life" expectations lodged in the proposed learner outcomes and learning process, the Design Group found it necessary to look beyond traditional school boundaries for resources for the New Designs school.

Some of the resources needed are naturally occurring in the community surrounding the high school—the family, business, industry, and labor, community-based organizations, and other schools (preschool through post-secondary). These entities represent the essential partners for New Designs schools.

Effective partnerships will involve cooperative effort and shared goals, power and accountability. Partnerships based on collaboration and integration will be most effective.

Collaborative partnerships represent linked programs that naturally enhance both partners. Integrative partnerships involve partners whose structures are modified to accommodate joint objectives. In addition, a joint sphere of authority exists to accomplish those mutual objectives, resources are merged, and responsibility for success or failure is shared. Implicit in these partnerships should be a "want to" motivation.

PARTNERSHIP MOTIVES

Motives for partnerships may be classified within three areas — "obliged to," "ought to," and "want to."

"Obliged to" conveys top-down pressure for organizational partnership and evolves from a legal, funding or policy base.

"Ought to" prevails when organizations sense they will benefit from the association, even though that benefit may be largely undetermined.

"Want to" describes the active involvement based on an anticipation of mutual personal and professional gain.

Jones and Maloy (1988)

The Design Group identifies four natural partnerships for the New Designs school:

Parents and Families — involvement within the home as parents and other family members encourage students toward positive learning atittudes; parental involvement within the school ranging from volunteer work in the classroom to school governance, and parental choices about the schools their children will attend.

Community-Based Organizations — schools join forces with human service agencies, churches and religious groups, and civic organizations so that students may learn responsibility and citizenship. One beneficial outcome of these partnerships is the development of prosocial behavior. Prosocial behavior covers a wide range of human actions — helping people in distress, donating time or energy to volunteer for service organizations, attempting to reverse political, economic and social injustice or inequality, and promoting the welfare of others.

Business, Industry and Labor — an increasingly common form of partnership with many initiatives coming from the private sector. In addition to providing valuable material resources, business, industry, and labor can validate economic applications of learning in a particularly convincing manner.

Other Schools — insightful planning of curriculum and instruction, avoidance of duplication, sound educational transitions and quicker achievement of goals, are faciliated when schools work together at all levels—preschool through graduate education.

PARTNERSHIP SPECIFICATIONS

Based on research and best practices, the Design Group recommends the following design specifications regarding partnerships:

- ❒ **Efforts should aim toward developing collaborative and interactive partnerships.**
- ❒ **Partnership efforts should aim toward "want to" motivation among partners.**
- ❒ **Partnerships should strive for mutual respect and trust among partners.**
- ❒ **Partnerships should build the ability of partners to bridge different institutional cultures.**
- ❒ **Partnerships should set realistic and clearly-stated expectations.**
- ❒ **Partnerships should employ good program practices as a means to sustain and improve the partnership.**

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STAFF AND STAFF DEVELOPMENT

Success for the comprehensive high school is especially sensitive to the manner in which staffing and staff development are carried out by school leaders. Staffing, here, refers to everyone directly involved in the learning process, as well as those indirectly involved in supporting roles.

A new conceptualizing of high school staffing was introduced into the New Designs school. Called relational staffing, it might be likened to the metaphor of a family. While parents might have primary responsibility for the care, guidance, and education of children — aunts, uncles, grandparents, older cousins, and others within the community play supporting roles in the upbringing of the children.

The New Designs environment is particularly adaptive to a family — or relational — model because of the small unit structure within larger neighborhoods and communities of learners. A relational staffing model is also in harmony with other design specifications for learning process, organization, and partnerships.

The New Designs Comprehensive High School calls for the thoughtful integration of vocational and academic education. Such integration requires close teamwork and interdisciplinary knowledge on the part of all. These are qualities that those involved in both staffing and staff development should bear carefully in mind.

Staff will need to look upon their responsibilities in a fashion unlike the perspectives of traditional high school education. Emphasis will shift from conceptualizing subject matter, which exists independently — often departmentally — within formal school settings.

Instead, focus will be on an integrated curriculum featuring subject matter that combines and coordinates disciplinary knowledge. Curriculum will be written and organized from the standpoint of broad meaning and value implications.

Assessment will not be regarded so much as an evaluative tool to measure the student or teacher performance but as a resource emphasizing instructional involvement and directly linked to specified learner outcomes.

STAFFING DESIGN SPECIFICATIONS

Based on the design-down process, the Design Group recommends the following design specifications for staffing and staff development:

❒ Staff, individually and collectively, should exhibit character qualities and conduct that are set as expectations of high school graduates.

❒ Staff should understand how to look at curriculum, instruction and assessment as an integrated whole to achieve learner outcomes. They should be viewed as independent and interdependent activities and interrelated learning tools.

o Staff should know how to construct, research, develop and write interdisciplinary and integrated curriculum that addresses learner outcomes.

o Staff should know how to use a variety of methods, strategies, and instructional techniques and understand their appropriate fit to curriculum.

o Staff should know how to develop forms of assessment that account for curriculum content, evaluate the effectiveness of instructional methods and account for both individualized and collective learner outcomes.

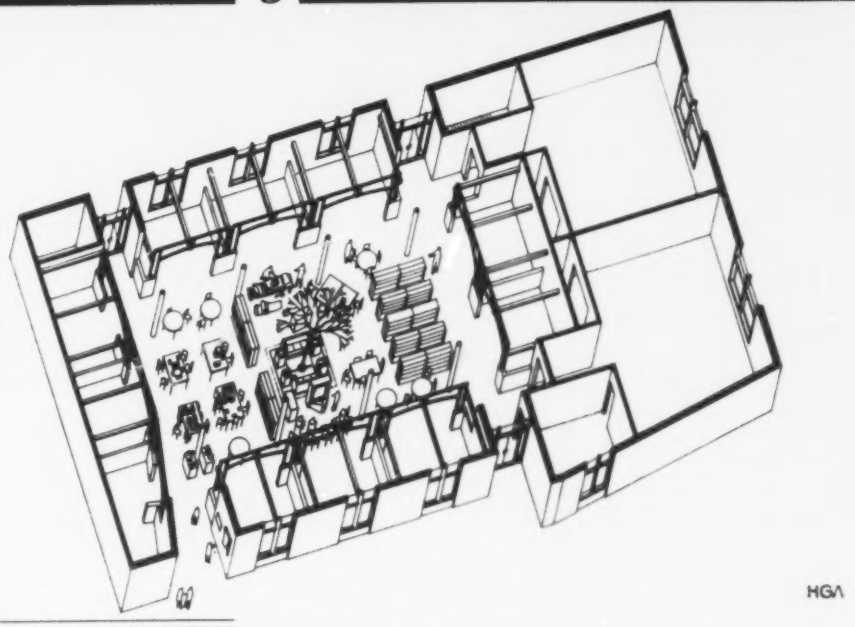
❒ Staff should reflect the ability to occupy and carry out multiple and alternating roles in which collaborative decision making is the operational norm.

❒ Staff should be willing to work actively to create opportunities in which the community can become involved in the learning process. Staff should have knowledge, skill and experience with community partnerships in the area of their learning discipline. Staff should include members of the community who participate in the learning process both inside and outside the school.

❒ Staff development should include all staff participating in the learning processes and be consistent with other design specifications for the school.

LEARNING TECHNOLOGY

All too often it has been thought that buying new computers and software programs will somehow magically transform the learning process. But the common practice of simply adding technology cannot achieve changes in the school without modification of the other dimensions of the school.



Technology-zoned environments are a key element in the design of the comprehensive high school. Students and staff will need a multiplicity of spaces — open areas, small cubicles designed for five to ten participants, larger gathering places, and a number of individual and independent learning places.

True change needs a redefinition of what goes on within the classrooms and a rethinking of the way teachers teach and students learn. Only then can new technologies have a key facilitative role in the school's transformation.

The new and emerging technologies essential in the New Designs Comprehensive High School will be those that connect people to the learning environment and provide easy access to multiple sources of information—technologies that will make learning accessible from disparate locations; and be flexible and portable. As a result, disabled students will be able to fully participate in all learning activities.

Computers, calculators, electronic networks, telecommunications, database, graphics and publishing software, videodisk, CD-ROM, interactive and satellite television all will be put to educational use.

The most important benefits technology will bring to the learning community are venue and opportunity for interaction, collaboration, and information exchange. Through technology the school becomes a vital meeting place for a host of community services.

For students to be prepared for the increasingly complex and changing world, they will need access to the tools that routinely are used by adults in the workplace, home, and community. The challenge is to engage students in skillful use of these tools as learning resources.

Technology catalyzes the learning process by encouraging authentic achievement when students tap into the use of multiple intelligence. Next, multimedia tools can be matched to individual learning needs, including those of the disabled.

Finally, technology promotes a sense of ownership when learners actually create their understandings and become active, experiential learners.

The learning environment of the New Designs school allows collaborative, project-based learning to occur naturally. In many ways this type of learning is similar to activities in the real workplace, homes, and communities.

Learning technology is a community investment and will encourage active participation by the learning partners in post-secondary institutions, businesses, homes, and in the community.

TECHNOLOGY DESIGN SPECIFICATIONS

If the design specifications for the new comprehensive high school are to be realized, technology must be directed to each of the parts. This gives the school its shape and direction and serves as its ecosystem. All learners — students and staff — should be able to:

❒ access the same personal productivity tools used by adults in the workplace, home, and community.

❒ access multimedia tools for information retrieval, manipulation, knowledge production, and presentation.

❒ use an installed backbone network with access to stations throughout the network and to resources beyond the school.

❒ use an open, interactive, distributed, instructional management system (IMS) designed for monitoring alignment of curriculum, instruction, assessment, and student performance tracking.

❒ use a management system that helps students, parents, and teachers work together to develop and manage the personalized learning plan (PLP).

❒ access multimedia tools and a local area network merged to worldwide telecommunication networks.

❒ use an installed satellite and/or two-way interactive television and an installed computer-based instructional learning system (ILS), if justified by a needs assessment process.

❒ share the common goals and responsibility of learning technology with learning partners in the school and community.

❒ work with technology in a multiplicity of zoned spaces such as open areas, small cubicles designed for up to five participants, larger gathering spaces, and a number of individual and independent learning places.

❒ participate in a technology needs assessment.

LEARNING COSTS

The impact on operating costs for the New Designs school can be analyzed under four scenarios. Each of the first three scenarios emphasize a different feature of the design specification, while the fourth is a combination of the other three. For each scenario, the reference point was the current cost of operating a traditional comprehensive high school.

The four scenarios are: (1) a learning technology focus, including equipment, maintenance, and staffing; (2) a partnership focus, including capital expenditures, staffing, and transportation costs; (3) a relational staffing approach, including extended flexible roles and responsibilities for staff, and (4) an integrated — combination — focus, including technology, partnerships, and relational staffing.

The primary challenge of a cost analysis is establishing a cost basis for a typical comprehensive high school today. Data by type or level of school is not readily available, but estimates of average costs were able to be compiled. There is a lack of comparability in how districts account for various costs and how those costs are assigned within the organization. The table (right) shares the results of analysis of impact on operating costs with each of the above four scenarios..

Learning Technology — A learning technology focus includes equipment, maintenance, and staffing. This will require more than currently is invested for initial purchases, replacement of worn-out and out-dated equipment, and training on replacement equipment.

Partnerships — The impact on costs from a partnership focus will vary considerably as the nature, level, and goals of multiple partnerships emerge. However, the underlying partnership premises of shared resources, expertise, and financial capital available within the community will result in reduced costs.

Relational Staffing — A relational staffing model in the New Designs environment will cost moderately less than a similar level of adult support in a typical comp-

RELATIVE COSTS OF PARTICULAR EMPHASES IN NEW DESIGNS HIGH SCHOOL AS COMPARED TO TYPICAL PRESENT COSTS

ERS Budget Category	Traditional Focus Per High School Pupil Expenditure @ 1.3 Ratio	Anticipated Change Technology Focus	Partnership Focus	Relational Staffing Focus	Integrated Focus
Total current expenditures	$ 5,920	+	0	0	0
■ Total Current Expenditures	4,002	+	0	0	0
Classroom Instruction	2,939	+	0	0	0
Special Education	492	0	0	0	0
Books and Materials	165	0	0	0	0
Auxiliary Instructional Services	244	+			0
Improvements and Development of Instruction	83	++	+	+	+
■ School Site Leadership	320	0	+		0
Total Student Services	463	0		0	0
Health and Attendance	94	0			0
Transportation	276	0	+	0	0
Food Service	18	0	0	0	0
Student Activities	60	0			0
■ Board of Education Services	33	0	0	0	0
■ Executive Administration	111	0	0	0	0
■ Central and Business Services	143	0	0	0	0
■ Maintenance and Operations	492	+	0	0	0
■ Environmental Conditioning	159	+	0	0	0
■ Other Current Expenditures	195	+	0	0	0
■ Capital Outlay	284	++	0	0	+
■ Debt Retirement	176	0	0	0	0
■ Interest Paid on Debt	120	0	0	0	0

Note: ++ Substantial increase of more than +20%
+ Moderate increase of +5% to +20%
0 Little or no change anticipated +5% to -5%
− Moderate decrease of -5% to -20%
−− Substantial decrease of more than -20%

Operating cost changes have been analyzed from the perspective of the high school only. No attempt has been made to document and report potential "cost shifts" to other segments of the community.

LEARNING COSTS SPECIFICATIONS

Several factors need important consideration when contemplating the comparative costs of operating a New Designs Comprehensive High School:

- Operational costs associated with the traditional high school are not necessarily adequate or appropriate to accomplish the mission of the school.
- Operational costs associated with the implementation of the New Designs will vary in response to local circumstances and conditions.
- Equipment and material costs will increase as technology utilization increases, but partnerships and relational staffing potentially can offset a significant portion of the costs.
- The more students take responsibility for the care and cleanliness of their work spaces, the less likely are custodial and maintenance costs to increase significantly.
- The more the work environment of the high school is organized and operated consistent with the adult world of work, the more opportunities are created to share equipment, materials, human resources, training activities, and to contain costs.
- Increases in partnership activities are likely to be accompanied by increased transportation needs.
- A relational staffing approach offers possibilities to use special expertise and multiple roles in a flexible response to student learning needs without increasing costs significantly.
- Creative partnerships involving shared equipment, facilities, and staff can result in significant new access to students without new costs to schools and their partners.

rehensive high school. While some increases in staff development and training costs can be expected, savings can be realized through lessened dependence on some administrative services.

Integrated Strategy — This focus has a synergistic effect that exceeds the impact of the three previous scenarios when they are considered separately. A moderate increase in costs can be projected in the areas of staff development and capital outlay. However, the direct capital outlay for learning technology is projected to be far less than in the technology focus because partnerships will distribute the purchase, access, training, and maintenance costs.

It appears as if, given the level of creativity suggested by the above scenarios, the New Designs Comprehensive High School will cost about the same as the typical comprehensive high school. Although some of the savings projected through these scenarios stem from "cost shifting," a bonus to students comes from greater connections with community adults, access to more community learning resources, and more authentic and complex learning processes.

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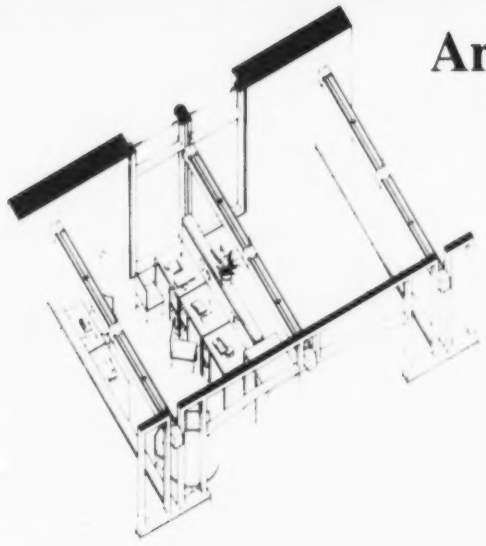
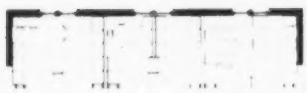
Archetype For A New Facility





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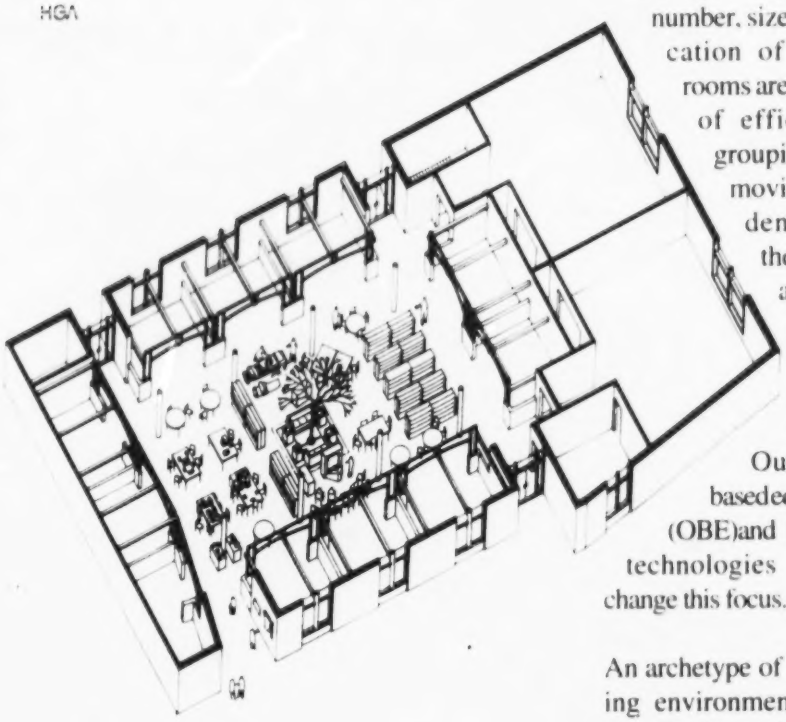


Altering the public's image of school facilities may be the single most difficult part of the needed transformation in American education. Learning takes place in many different settings. Therefore, the school must reinforce the linkage to other settings and strengthen the bonds between the school and the greater community.

School must become a vital learning environment. The traditional high school design is strongly determined by the Carnegie Unit. The number, size and location of classrooms are a result of efficiently grouping and moving students so they may accumulate their time units. Outcome-based education (OBE) and learning technologies totally change this focus.

An archetype of a learning environment for a New Designs school was created by educational facility planner Bruce Jilk, AIA, CEFPI, and designer Jim Shields, AIA, who are associates with HGA, Inc., Minneapolis, Minn. They combined important educational concepts from all phases of this project to create this plan for a new facility.

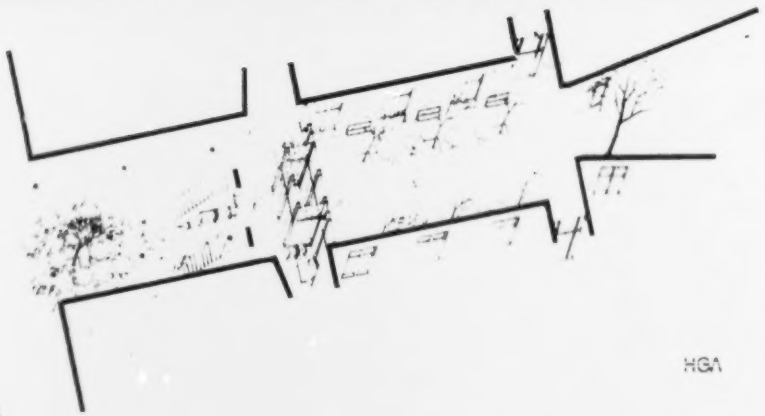
A new facility provides the best opportunity to develop and illustrate innovative spatial concepts, but opportunities to explore renovations of existing high schools or other facilities also exist.

The archetype is not attached to a land site or existing structure. Therefore, it has been shown and described as a kit of parts. The parts of the kit include the personal workstation work group of five students, the 100-student family, the 400-student neighborhood, and the 1,600-student community.

PERSONAL WORKSTATION FOR GROUPS OF 5 STUDENTS —

The personal workstation for groups of five students (illustrated above left) is the basic design unit. Each is furnished with a modular desk with a drawer, a chair,

and a computer network connection. A group of five workstations is "home base" for five students; two groups of five are paired to provide flexibility. Each group shares a cabinet and round table, which provides a sense of place and encourages cooperative group work.



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100-STUDENT FAMILY—The family house (lower left) is comprised of 100 students; 25 student work groups situated around the Resource/Production space, which provides areas for instruction, construction, demonstration and display. Commonly used resource materials, group and individual work spaces, and learning technology are found here.

Three other areas at the periphery are a flexible laboratory, a large group meeting space, and staff workroom. The flexible laboratory can be used for a variety of teaching applications in various curriculum areas.

400-STUDENT NEIGHBORHOODS—Four families and their support spaces are united by the centrally located commons. Each commons is used for dining, studying, and socializing; small and large group activity, and offers entrance into and out of the community. A unique feature is space for four studios that facilitate and encourage integration of vocational and academic education.

1600 - STUDENT COMMUNITY — Four neighborhoods and the activity block (physical education and fine arts) surround a central forum. As in ancient Roman cities, the forum in this school will be the central location for community activities that draw all four neighborhoods together. The functional areas of the forum are a performance space, print library, governance, school-based store, and community services.

The archetype was designed for 1,600 students who would be organized in an interrelated system of units. The unit system allows the design to be useful for other multiples such as 400, 800, 1,200 or 2,000 students. The individual is the starting point for the unit system. The base units are then expanded to the level of the work group, family, neighborhood and community. The units system has a symmetry creating a sense of learning community that is repeated despite the change in scale or level.

The archetype also exhibits a unity with the community. Parks, homeless shelters, low income housing, public library, medical clinic, retail businesses, professional offices, elder care facilities and others all have a proximity to the school which fosters a give-and-take exchange — partnerships — with the school.

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Design Features For A 21st Century High School

During its two-year enterprise to synthesize educational research and exemplary school practice, the Design Group labored to resolve hard problems. In the process the Design Group recommended the following features be built into the new designs for the 21st century comprehensive high school.

- **Guaranteeing a set of learner outcomes linked closely to future life roles and responsibilities for all students.**
- **Learning expectation which include both knowing and applying learning in life situations using authentic assessment.**
- **Multiple ways to learn that are responsive to learning styles and interests.**
- **Integration of high level academic education and modern vocational education for all students.**
- **Partnerships with parents and families, business, industry and labor, community-based organizations, and other schools to diversify learning settings and improve learning effectiveness.**
- **Special character or focus to the school that gives coherence and spirit to learning.**
- **Operation as a learning community that pays attention to caring, attachments, and expectations often requiring the subdivision of large schools into smaller units.**
- **Alignment and unification of the components of the school in the interests of quality and efficiency.**
- **Decision making that is consistent with overall aims, yet is located close to the problem at hand.**
- **Costs which are no more than those for existing schools.**
- **Partnership with the larger community as a way to make learning up-to-date and meaningful.**

These features are designed to prepare young people to improve the state of affairs in families, workplaces, and communities. In turn, one of the intended benefits is an economy which serves a more caring, just, and productive world society.

ORDERING FULL REPORT

The complete report of this project, New Designs for the Comprehensive High School, is available by writing or calling: NCRVE Materials Distribution Service, Western Illinois University, Horrabin Hall 46, Macomb, IL 61455; 800-637-7652.Copies of the Executive Summary can be obtained by calling 612-624-1705.

Message From The Project Director

This work is intended for those who care deeply about young people and their experience in high schools, and who are willing to take risks to turn schools upside down and inside out in order to improve learning for all students. It is the product of the combined efforts of a uniquely talented and committed cadre of people.

Speaking on behalf of Project Coordinator Ginny Pease, other project staff, and myself, special appreciation is expressed to Paul Cole and Charles Benson for the spark of imagination and encouragement that led to this work. We recognize the special contribution and inspiration of Professor Robert Beck as colleague and co-director for the first year of this project (and a prior related project) until his death at the end of 1991; his ideas are woven into the fabric of this report and its substance is greatly enriched by them.

Special thanks is conveyed to those high school students, teachers, and school administrators in cities across the country who took time from their busy lives to answer our focus group questions about how to make high schools better places in which to learn.

We sincerely appreciate the contribution of a group of very talented people who prepared a series of review and synthesis papers that underlie the recommendations made in this project. We especially recognize Bruce Jilk, educational architect with HGA, who played a pivotal role in making our vision more real and authentic — this was a true "want-to — want-to" partnership.

Last, we particularly recognize the project's Design Group, which was made up of people with a rare blend of strong convictions and openness to different perspectives. These exceptional qualities contributed to spirited and meaningful discussions and eventually allowed the work itself to speak in its own voice. And Eileen Kuehn, as education writer, has played a special and effective role in capturing this voice in prose.

George H. Copa
November 1992

DESIGN GROUP

The Design Group is a collaborative effort involving representatives of state and school district educational administration, noted educational leaders and researchers, vocational and academic instructors, teachers' union representatives, vocational and secondary school administrators, the community, and business interests. They are:

Director: George H. Copa, University of Minnesota, Department of Vocational and Technical Education, assisted by Project Coordinator Ginny Pease. Members: Charles Benson, director, and Phyllis Herriage, associate director, National Center for Research in Vocational Education, Robert Bartman, Missouri Department of Elementary and Secondary Education; Gene Bottoms, South Regional Education Board, Atlanta, GA.; Diana Canales, Corpus Christi (Texas) Independent School District; Paul Cole, AFL-CIO, Albany, NY; Edwin Espaillat, United Federation of Teachers, New York, NY; Jerome Finnigan, manager of education and training at Xerox D & M Group - West; Nancy Hartley, chair of the School of Occupational and Educational Studies, Colorado State University; Lola Jackson, state vocational director for the Michigan Department of Education, Vocational-Technical Educational Services; Carol Matarazzo, secondary school administrator at Lincoln High School in Portland, OR; Marilyn Peplau, counselor and vocational teacher at New Richmond High School, New Richmond, WI; Mary Anne Raywid, Hofstra University Department of Administration and Policy Studies, Hempstead, NY; Walter Tobin, school administrator for Orangeburg School District Five, Orangeburg, SC.

NEW DESIGNS FOR THE COMPREHENSIVE HIGH SCHOOL

A Project of the NCRVE, Berkeley; University of Minnesota Site, College of Education, Department of Vocational and Technical Education, St. Paul, Minnesota

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